REMARKS

This Amendment is responsive to the Office Action dated May 4, 2006. Applicant has amended claims 3, 4, 10, 12, 14, 26, 28, 30 and 36, canceled claims 5-8, and added new claims 40-45. Claims 1-4, and 9-45 are pending.

Claim Rejection Under 35 U.S.C. § 112

In the Office Action, the Examiner rejected claims 3-6 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant has amended claims 3 and 4 for purposes of clarification. Applicant submits that claims 3 and 4, as amended, particularly point out and distinctly claim the subject matter, as required by 35 U.S.C. § 112, second paragraph. Applicant has also canceled claims 5 and 6, rendering their rejection under 35 U.S.C. § 112 moot. Accordingly, Applicant respectfully requests that the rejection to claims 3-6 under 35 U.S.C. § 112, second paragraph be withdrawn.

Stokes et al. (US 6,567,705) Is Disqualified as Prior Art Under 35 U.S.C. § 103(c)

The invention claimed in the present application and U.S. Patent No. 6,567,705 to Stokes et al. were, at the time the invention was made, owned by or subject to an obligation of common assignment to Medtronic, Inc. As a result, the Stokes et al. reference is disqualified under 35 U.S.C. § 103(c) from being used in a rejection under 35 U.S.C. § 103(a) against the claims of the present application.

Claim Rejection Under 35 U.S.C. § 103

In the Office Action, the Examiner rejected claims 1-35 under 35 U.S.C. § 103(a) as being unpatentable over Stokes et al. in view of Lee et al. (US 5,265,608). Claims 36-39 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Stokes et al. in view of Lee et al. as applied to claims 1-35 above, and further in view of Farrer et al. (US 6,565,777).

As the Office Action stated, the rejection of claims 1-39 under 35 U.S.C. § 103(a) can be overcome by showing that Stokes et al. is disqualified under 35 U.S.C. § 103(c) as prior art in a rejection under 35 U.S.C. § 103(a). Applicant respectfully requests that the above rejections of

claims 1-39 be withdrawn in light of the statement above establishing common ownership or obligation of assignment of the invention claimed in present application and the Stokes et al. reference at the time the invention was made.

In the interest of advancing prosecution, Applicant notes that the Stokes et al. patent is a continuation of U.S. Patent Application Serial No. 08/682,433 (now abandoned). Patent Cooperation Treaty Application No. PCT/US97/05556 (Stokes et al. II), filed on April 4, 1997 and published as WO 98/02040 on January 22, 1998, also claims the benefit of U.S. Patent Application Serial No. 08/682,433. While Applicant does not admit that Stokes et al. II is prior art, Applicant submits that claims 1-4 and 9-39 are patentable over Stokes et al. II, even when combined with Lee et al. and Farrer et al.[1]

It is well established in order to establish a *prima facie* case of obviousness, the prior art must provide a "teaching or suggestion to one of ordinary skill in the art to make the changes that would produce" the claimed invention.[2] A prima facie case of obviousness is established only when this burden is met. In the present case, Stokes et al. II, Lee et al., and Farrer et al. fail to provide the necessary teaching or suggestion to render the invention of Applicant's independent claims 1, 21, and 35 obvious. For example, the references fail to teach or suggest eluting a genetic material from a polymeric matrix to a stimulation site, as recited by Applicant's independent claims 1 and 21. The references also fail to teach or suggest a method that includes introducing genetic material to a polymeric matrix and placing the matrix into a chamber formed by a chamber body of a medical lead for elution of the genetic to tissue at a stimulation site, as recited by Applicant's independent claim 35.

While Stokes et al. II may mention passive delivery of an ion protein genetic material to cardiac tissue, there are no further teachings in Stokes et al. II as to the specifics of the passive delivery. In the Office Action, the Examiner relied on Lee et al. to cure a similar deficiency in the now-disqualified Stokes et al. reference. Specifically, the Examiner stated that, "Lee et al. however teach the use of a polymeric matrix for the delivery of an active agent to a stimulating site . . ." (Office Action at page 3.) However, this is an improper modification of the references because nothing in Lee et al. (nor Stokes et al. II or Farrer et al.) provides a sufficient basis for

[1] Claims 5-8 have been canceled, rendering their rejection under section 103 moot.
[2] *In re Chu*, 36 USPQ2d 1089, 1094 (Fed. Cir. 1995).

finding that one skilled in the art would have reasonably expected the delivery of a genetic material to a stimulation site via a matrix to be successful. References can be modified or combined to reject claims as *prima facie* obvious as long as there is a reasonable expectation of success. See M.P.E.P. § 2143.02. Because it is apparent that neither Stokes et al. II nor Lee et al. contemplate delivery of a genetic material via a polymeric matrix, there is no basis for finding a reasonable expectation of success. In this case, the requisite reasonable expectation of success is not present, and accordingly, claims 1, 21, and 35 are not *prima facie* obvious in view of Stokes et al. II, Lee et al., and Farrer et al.

In further support of Applicant's position that independent claims 1, 21, and 35 are not rendered obvious by the combination of Stokes et al. II and Lee et al. is the lack of motivation to combine Stokes et al. II with Lee et al. In particular, Lee et al. teaches away from applying its cuff electrode having a matrix embedded with a steroid drug to a cardiac pacing application. More specifically, Lee et al. states that, "because cardiac pacing leads establish electrical contact with cardiac muscle tissue rather than nerve tissue, the total contact area is extremely small to increase current density. Therefore, the area of cardiac muscle tissue to be treated by the embedded drug is so small that only minute quantities of drug need to be eluted." (Col. 1, lines 50-60.) In other words, Lee et al. specifically teaches that its cuff electrode and matrix would not be useful in cardiac applications. Thus, one skilled in the art would not have been motivated to modify the Stokes et al. II lead with the Lee et al. matrix.

Dependent Claims

As established above, independent claim 1, 21, and 35 are patentable over the cited references, and as a result, claims 2-4 and 9-20, which depend from claim 1, claims 22-34, which depend from claim 21, and claims 36-39, which depend from claim 35 are also patentable over Stokes et al. II, Lee et al., and Farrer et al. Applicant addresses some of the dependent claims below for purposes of illustration.

The Examiner found that, "as to Claims 2-6, modifying the type of matrix . . . would have amounted to an obvious choice in design absent any teaching of criticality or unexpected result." (Office Action at page 3.) Upon entry of this Amendment, claims 5 and 6 are canceled and the rejection of claims 5 and 6 is moot. Applicant traverses the rejection of claims 2-4 to the extent

that the Examiner contends that it is merely a "choice in design" to modify the matrix of Lee et al. to include the elements/features recited in Applicant's claims 2-4. The Examiner has not provided any evidence supporting the conclusion that the specific characteristics of the matrix recited in Applicant's claims 2-4 are "obvious choice[s] in design."

It is improper for the Examiner use mere recitations of "design choice" to avoid the burden of establishing a prima facie case of obviousness based on concrete evidence. As held by the Court of Appeals for the Federal Circuit, it is improper for the Examiner to rely on such a subjective musing or conjecture of obviousness.[3] Rather, a rejection of claims under 35 U.S.C. § 103(a) must be based on substantial evidence.[4] Without a concrete basis in the evidentiary record establishing that it would have been obvious to a person with ordinary skill in the art to incorporate the features of Applicant's dependent claims into the Stokes et al., a rejection of the claims under 35 U.S.C. § 103(a) is improper.

For example, with respect to the rejection of Applicant's claim 2, Stokes et al., Stokes et al. II, Lee et al., or Farrer et al. fail to teach or suggest delivery of a genetic material to a stimulation site via a matrix comprising extracellular collagen. Lee et al., which is the only reference to even mention a matrix, only teaches a matrix comprising dexamethasone sodium phosphate and silastic medical adhesive. Lee et al. does not even provide guidance for selecting a matrix, and does not mention extracellular collagen as a possible alternative to dexamethasone sodium phosphate and silastic medical adhesive. There is no support for the assertion that it is merely a "choice in design" to substitute an extracellular collagen matrix for the dexamethasone sodium phosphate and silastic medical adhesive matrix of Lee et al. Applicant's claims 21 and 36 also recite extracellular collagen, and the arguments relating to claim 2 are also applicable to claims 21 and 36. For the foregoing reasons, claims 2, 21, and 36 are not obvious in view of Stokes et al. II, Lee et al., and Farrer et al. .

Applicants also disagree with the Examiner's conclusion that modifying a matrix as recited in Applicant's claim 4 is merely a "choice in design." The motivation to add such a feature would have come only from Applicant's own disclosure, which recognizes that cross-linking of the matrix controls the timing and rate of elution of genetic material from the matrix.

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[3] *In re Lee*, 61 USPQ2d 1430, 1434 (Fed. Cir. 2002).
[4] *Id.*

(See Applicant's disclosure at page 2, paragraph 7.) Stokes et al. II, Lee et al., and Farrer et al. fail to teach or suggest a cross-linked polymeric matrix, much less a cross-linked polymeric matrix that delivers a genetic material to a stimulation site at a rate that is a function of the cross-linking, as recited by Applicant's dependent claims 4 and 23. Similarly, Stokes et al. II, Lee et al., and Farrer et al. also fail to teach or suggest a method that includes cross-linking a polymeric matrix based on a genetic material and elution rate, as recited by Applicant's dependent claim 37.

The skilled person, without access to Applicant's disclosure, would not have appreciated the advantages of a cross-linked polymeric matrix. Neither Stokes et al. II nor Farrer et al. even disclose utilizing a polymeric matrix to deliver a genetic material to a stimulation site. Furthermore, Lee et al. does not even teach or suggest that degradation of a polymeric matrix (which affects the timing and rate of release of a material contained within the polymeric matrix) may be controlled by the extent of cross-linking of the polymeric matrix. Lee et al. merely states that, "a polymeric matrix . . . permits the drug to leach out at the desired rate" and does not disclose how the predetermined rate may be achieved. (Col. 2, lines 7-8.)

With respect to Applicant' s claims 12-15, it is improper to state that changing the genetic material to achieve a different effect dependent upon specific patient needs would have amounted to a routine diagnosis and treatment procedure and therefore obvious to the skilled artisan." (Office Action at page 4.) The conclusions of obviousness by the Examiner are improper because the Examiner is not relying on prior art references to establish a teaching and motivation to modify a genetic material to include the genetic material recited in Applicant's claims 12-15. Instead, the Examiner's conclusion of obviousness is based entirely on unsupported conjecture and the benefit of hindsight in view of Applicant's disclosure.

Nothing in Stokes et al. II, Lee et al. or Farrer et al. even mentions expression of "a connexin or a gap-junction by the tissue at the stimulation site," as recited by Applicant's claim 12 as amended, expression of "at least one of metalloproteinase, an anti-inflammatory agent or an immunosuppressant agent" as recited by Applicant's claim 14 or "expression of IκB," as recited by Applicant's claim 15. Lee et al. and Farrer et al. do not mention expression of proteins, and Stokes et al. II merely teaches the expression of an ion-channel. (See, e.g., Stokes et al. II, Abstract). Accordingly, there is no basis for concluding that based on the teachings of the references, it would have been obvious to one skilled in the art to select the gene expressions

recited in Applicant's claims 12-15 as part of a "routine diagnosis and treatment procedure." Unless the Examiner can establish an evidentiary record based on concrete prior art references that establish that it would have been obvious to a person with ordinary skill in the art to incorporate the features of Applicant's dependent claims 12-15, claims 12-15 should be allowed. Applicant's dependent claims 28-31 are similar in scope to claims 12-15 and are allowable for the same reasons as claims 12-15.

Applicant's claims 20 and 34 specify that transgene expression in response to delivery of genetic material in a cardiac application creates a preferential conduction pathway between the stimulation site and an intrinsic conduction system of a heart of a patient. Stokes et al. II, Lee et al., and Farrer et al. fail to teach or suggest the elements of claims 20 and 34. First, Lee et al. and Farrer et al. do not teach or suggest delivery of genetic material to a stimulation site. Second, Stokes et al. II does not teach or suggest transgene expression for creating a preferential conduction pathway between the stimulation site and an intrinsic conduction system of a heart. As Applicant recognizes, conduction of pacing pulses via such a pathway may lead to more synchronous, hemodymanically efficient contraction of the heart. (See Applicant's disclosure at page 3, paragraph 12.) Stokes et al. more generally refers to improving the signal-to-noise ratio for cardiac signal sensing, and does not teach or suggest the invention of Applicant's claims 20 and 34.

With respect to Applicant's claims 36-39, the Examiner stated that, "merely adopting known freeze-drying techniques in the making of polymer drug matrices would have amounted to an obvious choice in manufacturing design." (Office Action at page 4.) Applicant respectfully disagrees that the methods described in claims 36-39 are obvious choices in manufacturing design. The motivation to utilize the methods described in claims 36-39 would have come only from Applicant's own disclosure. For example, Applicant's dependent claim 36 (as amended) recites a method that includes blending extracellular collagen and gelatin and freeze-drying the blended extracellular collagen and gelatin to form the matrix. As previously established, nothing in Stokes et al., Lee et al., or Farrer et al. teach or suggest a matrix formed from an extracellular collagen. As another example, Applicant's dependent claim 37 specifies that the method of claim 35 includes cross-linking the matrix based on the genetic material and an elution rate.

Stokes et al., Lee et al., or Farrer et al. fail to teach or suggest a cross-linked matrix, much less a cross-linking a matrix based on an elution rate.

In view of the foregoing reasons, Applicant's claim 1-4 and 9-39 are patentable over Stokes et al. II, Lee et al., and Farrer et al. and are in condition for allowance.

New Claims:

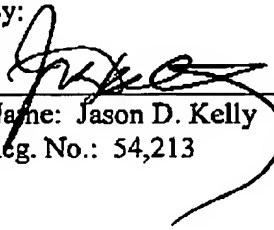
Applicant has added claims 40-45 to the pending application. Claims 40-42 depend from independent claim 35 and are similar in scope to canceled claims 5-8, which related to a process of making a lead including a polymeric matrix and genetic material. Claims 43-45 are directed toward a method for increasing the conductivity of cardiac tissue of a patient at a stimulation site. Support for claims 43-45 can be found at page 4, paragraph 21 of Applicant's disclosure.

The Stokes et al. II, Lee et al., and Farrer et al. fail to disclose or suggest the inventions defined by Applicant's new claims, and provides no teaching that would have suggested the desirability of modification to arrive at the claimed inventions. For example, the reference fails to disclose or suggest a method comprising eluting genetic material from a lead to a stimulation site to cause transgene expression of at least one of a connexin or a gap-junction by tissue at the stimulation site, as recited by claim 43. No new matter has been added by the new claims.

CONCLUSION

Claims 1-4 and 9-45 in this application are in condition for allowance. Applicant respectfully requests reconsideration and prompt allowance of all pending claims. Please charge any additional fees or credit any overpayment to deposit account number 50-1778. The Examiner is invited to telephone the below-signed attorney to discuss this application.

Date: August 4, 2006

By: 

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